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PROGRESS REPORT NO. 9

TRAVELING-WAVE TUBES

Index No. 111613, Task 9

Contract N0bsr-57354

February 1953 ✓

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**NAVY DEPARTMENT, BUREAU OF SHIPS
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PROGRESS REPORT NO. 9

TRAVELING-WAVE TUBES

During the month of February 1953, the work on the development of the two traveling-wave tubes has continued according to schedule.

Driver Tube

Although in the previous report mention was made of parts on order for a beam-test tube, refinements effected in the design of these parts necessitated the placement of new orders. At present, the construction of an exhaust station for both the driver and output tube is under way.

Experiments are being continued on the coupled helix structure. The coupling band width has been enlarged, but as yet the band has not been centered at the desired frequency.

Output Tube

Favorable progress has been made on matching to an octafilar helix. A match giving a VSWR of less than 1.5 has been achieved over a 30-percent band width. Even though this is much larger than required, it is believed that some modifications are still necessary in the structure.

Preliminary power tests have been made on an octafilar helix in which three to four hundred watts of r-f energy was passed through the structure. There was no noticeable effect on the helix or matching sections, but a poor vacuum in the structure prevented applying any greater amount of r-f power. With increasing r-f power, the gas in the system could ionize and cause a mismatch. The structure is being readied for high-vacuum operation.

The gun parts for the new bombarder gun have been completed, and a test gun is under construction.

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